

present application was filed in the United States on June 14, 2000. Wang does not pre-date the present invention. Wang is a Chinese patent document; Wang was not filed in the United States or internationally via the PCT; therefore, Wang is not prior art to the present application under §102(e). Further, the disclosure of Wang did not occur prior to the Applicants' invention of the present invention and is therefore not prior art under §102(a). Accordingly, Applicants respectfully request withdrawal of this rejection.

Claims 1-30 stand rejected under 35 U.S.C. §103(a) as being obvious over Braun in view of Wang and Couzy and JRC KK and Lindon. Applicants respectfully traverse this rejection.

At the outset, Applicants refer to the discussion above regarding Wang's ineligibility as prior art to the present invention.

Further, Applicants believe that a brief review of the key features and advantages of the present invention would be helpful prior to discussing the merits of the prior art rejection. According to the present invention, a hydrate form of calcium sulfate is used as the sole source of calcium to produce a calcium fortified beverage composition having a bland, neutral taste. When attempting to provide fortification to the level of about 10% RDV (100 mg/8 oz.), taste, or lack thereof, is very important. All other known calcium sources produce off-tastes in water, as can be seen from Table 1 below.

Table 1.

Compound		
Calcium citrate-malate	Malic off-taste	Requires high shear
Calcium citrate	Bland @ correct ratio	Requires high shear
Tricalcium dicitrate	N/A	Insoluble
Calcium malate	Malic off-taste	Soluble
Calcium tartrate	N/A	Insoluble
Calcium gluconate	Fairly bland	Soluble
Gluconal Cal™	Dirty, dairy off-taste	Soluble
Calcium glycerophosphate	Off-taste	Soluble
Calcium chloride	Salty	Soluble
Calcium lactate	Dairy off-taste	Soluble
Tricalcium phosphate	N/A	Insoluble
Calcium hydroxide	Astringent, irritant	Sparingly soluble
Calcium carbonate	N/A	Insoluble
Calcium sulfate dihydrate	Bland	soluble

Hence, the neutral, bland taste of the calcium fortified beverage compositions of the present invention allow flexibility in beverage design; additional fortificants and/or flavors can be added without the production of off-tastes and without the need for off-taste inhibitors or masking agents.

Further, as can also be seen from Table 1 above, other known sources of calcium have solubility issues which the hydrate form of calcium sulfate used in the present invention does not. What is more, most other known sources of calcium are near their respective limit of solubility when attempting to provide about 10% RDV; the hydrate form of calcium sulfate used in the present invention is easily soluble at that level. Further, a calcium fortified beverage composition of the present invention is perfectly clear when providing about 10% RDV.

In addition, since the hydrate form of calcium sulfate is readily soluble in water, there is no need for special processing conditions, i.e., no need to produce calcium source in situ from soluble acids and “insoluble” calcium salts, e.g., calcium carbonate, as

taught by Braun which is discussed below. Further, beverages are typically ozonated to prevent the growth of mold; calcium fortified beverage compositions of the present invention can be ozonated in this manner. This is very different from beverages containing many other calcium sources which cannot be ozonated without turning brown or creating precipitates.

In sum, it is clear that the use of a hydrate form of calcium sulfate as the sole source of calcium in a beverage has distinct advantages over the use of any other calcium source or combination of sources. In that light, the merits of the prior art rejections will now be discussed.

Braun relates to the reduction of precipitation and deposition of calcium salts on equipment surfaces during calcium fortified beverage processing. Braun employs small amounts of calcium sulfate, preferably in combination with calcium chloride, to improve the solubility of other calcium sources (mainly calcium hydroxide and calcium carbonate), in the presence of significant amounts of edible acids such as phosphoric, citric and malic acids.

Braun does not disclose or suggest the calcium fortified beverage composition of the present invention which consists essentially of purified water and a hydrate form of calcium sulfate. In fact, the beverages disclosed by Braun are very different from those of the present invention. The beverages of Braun contain numerous ingredients which would impart flavor and/or off-tastes to a resulting beverage. In particular, as noted in Table 1 above, the additional calcium salts present in the compositions of Braun would materially affect the calcium fortified beverage taste; calcium imparts a salty taste, calcium hydroxide imparts an astringent or irritant taste, and

calcium citrate-malate imparts a malic off-taste. What is more, the beverages of Braun could not be ozonated. Special processing steps must be undertaken in order to avoid browning or precipitation. Clearly, the calcium fortified beverages of Braun are different from the calcium fortified beverage composition of the present invention, which have a bland, neutral taste and which can be ozonated according to industry practice.

Lindon does not remedy the deficiencies of Braun. Lindon relates to a mineralized drinking water which contains calcium, strontium, magnesium and lithium ions. A mineral water of Lindon, not unlike most naturally occurring mineral waters, is very different from the calcium fortified beverage of the present invention by virtue of the additional materials present therein. Those additional ingredients affect the resulting beverages in a number of ways. First, taste can be greatly affected. Second, microbiological risk assessment and control are negatively impacted. The water employed in the present invention is purified to remove all mineral content prior to calcium fortification. This is done primarily to help achieve microbial safety, since microbes can feed on trace amounts of minerals. According to the present invention, the specific mineral content, i.e., calcium content, is controlled; as a result, the risk of microbial spoilage can be accurately assessed and appropriate processes and/or preservatives can be employed to guarantee microbial safety. This is not true for the water of Lindon or for any other naturally occurring mineral water.

What is more, Lindon prefers the use of calcium chloride to supply calcium ions. As noted in Table 1 above, calcium chloride would impart a salty taste, unlike the bland, neutral taste achieved by the present invention. Finally, the amount of calcium present in the mineralized water of Lindon, i.e., 60-125 mg/L, would not provide at least

10% of the U.S. RDV per serving, i.e., at least 417 mg/L. Note that 10% RDV is equivalent to 100 mg Ca/8 oz. serving (240 mL), which is equivalent to 417 mg/L. It is clear that the calcium fortified beverages of the present invention are distinct from the mineralized water of Lindon.

JRC KK does not remedy the deficiencies of the above noted references. JRC KK is directed to a very specific water treatment process, which produces a sweet tasting water suitable for drinking. The water contains an undetermined amount of calcium. As noted previously, any amount of calcium contained in the water of JRC KK is an incidentally and arbitrarily small amount present by virtue of the water having been “treated” with a material containing calcium sulfate; there is no suggestion in JRC KK to use calcium sulfate as a beverage fortificant. By contrast, according to the present invention, a hydrate form of calcium sulfate can be directly added to purified water to produce a very bland, neutral tasting calcium fortified beverage composition containing at least 10% of the U.S. RDV per serving for calcium.

Couzy does not remedy the deficiencies of the above discussed references. Couzy relates to natural mineral waters arguably containing calcium sulfate. As noted above, natural mineral waters, by virtue of the presence of a number of other materials, exhibit distinct tastes and increased biological risk.

In sum, it is clear that the combination of Braun, Wang, Couzy, JRC KK and Lindon does not render the present invention obvious. There is simply no disclosure or suggestion of the use of a hydrate form of calcium sulfate alone as a source of calcium to produce a calcium fortified beverage composition which has a bland, neutral taste, which

requires no special processing and which has manageable microbiological safety.

Accordingly, Applicants respectfully request withdrawal of this rejection.

In view of the foregoing remarks, favorable reconsideration and passage to issue of the present case is respectfully requested.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

  
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